

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for testing comprising:
~~irradiating an energy beam to a semiconductor film to improve a crystallinity;~~
~~irradiating a visible light on a surface of the semiconductor film, of which the~~
~~crystallinity is improved and a scattered light is photographed;~~
~~digitalizing the photographed image to make a digital image; and~~
~~calculating a luminance of the digital image by a computer in a direction~~
~~perpendicular to the scanning direction of the energy beam over the semiconductor film~~
irradiating a visible light on a surface of a semiconductor film, of which a
crystallinity is improved by irradiating an energy beam;
photographing a scattered light of the irradiated visible light; and
digitalizing the photographed image to make a digital image,
wherein a direction in which the energy beam is scanned is a Y direction, and a
direction perpendicular to the Y direction is an X direction in the digital image;
sectioning m x n basic units by dividing the digital image into m along the X
direction and into n along the Y direction in a predetermined analysis in the digital
image;
calculating an average value or a sum of a corrected saturation of the n basic
units aligned in the X directions per each of the m rows aligned in the Y direction; and
obtaining an approximate line from a relation of an position in the Y direction to
the average value or the sum corresponding to the position in the Y direction; and
testing the crystallinity of the semiconductor film, of which the crystallinity is
improved, with a fluctuation obtained from the approximate line, and the average value
or the sum.

2. (Canceled)

3. (Currently Amended) A method for testing comprising:

irradiating a visible light on a surface of a semiconductor film₁ of which ~~[[the]]~~ a crystallinity is improved by irradiating an energy beam;

photographing a scattered light of the irradiated visible light; and

digitalizing the photographed image to make a digital image,

wherein a direction in which the energy beam is scanned is a Y direction₁ and a direction perpendicular to the Y direction is an X direction in the digital image;

sectioning m x n basic units by dividing the digital image into m ~~[[in]]~~ along the X direction and n ~~[[in]]~~ along the Y direction in a predetermined analysis in the digital image;

calculating an average value or a sum of luminance of the ~~[[m]]~~ n basic units aligned in the X directions per each of the ~~[[n]]~~ m rows aligned in the Y direction;

obtaining an approximate line ~~[[of]]~~ from a relation of ~~the average of the luminance a position in the Y direction to [[a]] the average value~~ corresponding alignment to the position in the Y direction; and

testing the crystallinity of the semiconductor film₁ of which the crystallinity is improved, ~~by the with a fluctuation of the average of the luminance from the approximate line obtained from the approximate line, and the average value or the sum.~~

4.-10. (Canceled)

11. (Currently Amended) The method for testing according to claim 1, wherein the crystallinity of the semiconductor film is tested by using an average luminance ~~[[in]]~~ of the digital image is tested ~~altogether.~~

12. (Canceled)

13. (Currently Amended) The method for testing according to claim 3, wherein the crystallinity of the semiconductor film is tested by further using an average luminance [[in]] of the digital image ~~is tested altogether~~.

14.-15. (Canceled)

16. (Currently Amended) The method for testing according to claim 1, wherein the crystallinity of the semiconductor film is tested by further using an average corrected saturation in the digital image ~~is tested altogether~~.

17. (Canceled)

18. (Currently Amended) The method for testing according to claim 3, wherein the crystallinity of the semiconductor film is tested by further using an average corrected saturation in the digital image ~~is tested altogether~~.

19.-25. (Canceled)

26. (Currently Amended) A method for testing a beam profile comprising:
irradiating an energy beam of one pulse on a substrate [[on]] over which an amorphous semiconductor film is formed;
irradiating a visible light on a surface of the substrate and photographing [[a]] scattered light of the irradiated visible light;
~~digitalizing the photographed image to make a digital image; and~~

~~calculating a luminance of the digital image in a direction perpendicular to the scanning direction of the energy beam over the semiconductor film to test a profile of the energy beam~~

digitalizing the photographed image to make a digital image,

wherein a direction in which the energy beam is scanned is a Y direction, and a direction perpendicular to the Y direction is an X direction in the digital image;

sectioning m x n basic units by dividing the digital image into m along the X direction and n along the Y direction in a predetermined analysis in the digital image;

calculating an average value or a sum of a corrected saturation of the m basic units aligned in the X directions per each of the m rows aligned in the Y direction;

obtaining an approximate line from a relation of a position in the Y direction to the average value or the sum corresponding to the position in the Y direction; and

testing a crystallinity of the semiconductor film, of which the crystallinity is improved, with a fluctuation obtained from the approximate line, and the average value or the sum.

27. (Canceled)

28. (Currently Amended) A method for testing a beam profile comprising:

irradiating an energy beam of one pulse on a substrate ~~[[on]]~~ over which an amorphous semiconductor film is formed;

irradiating a visible light on a surface of the substrate and photographing ~~[[a]]~~ scattered light of the irradiated visible light; and

~~digitalizing the photographed image to make a digital image, wherein~~

~~a minor axis of the energy beam is a Y direction and a major axis is an X direction in the digital image;~~

~~dividing the digital image into m in the X direction and n in the Y direction in a predetermined analysis region to section m x n basic units;~~

~~calculating an average of luminance of the m basic units aligned in the X directions per each of the n rows aligned in the Y directions; and~~

~~testing a profile of the energy beam by a relation of the average of the luminance to a corresponding alignment in the Y direction~~

~~wherein a direction in which the energy beam is scanned is a Y direction, and a direction perpendicular to the Y direction is an X direction in the digital image;~~

~~sectioning m x n basic units by dividing the digital image into m along the X direction and n along the Y direction in a predetermined analysis in the digital image;~~

~~calculating an average value or a sum of luminance of the m basic units aligned in the X directions per each of the m rows aligned in the Y direction;~~

~~obtaining an approximate line from a relation of a position in the Y direction to the average value corresponding to the position in the Y direction; and~~

~~testing a crystallinity of the semiconductor film, of which the crystallinity is improved, with a fluctuation obtained from the approximate line, and the average value or the sum.~~

29.-31. (Canceled)

32. (Original) The method for testing according to claim 1, wherein the energy beam is a laser light.

33. (Canceled)

34. (Original) The method for testing according to claim 3, wherein the energy beam is a laser light.

35.-36. (Canceled)

37. (Currently Amended) The method for testing according to claim 1, wherein the visible light ~~has-such~~ is irradiated from a light source [[as]] selected from the group consisting of a metal halide lamp, a halogen lamp, a tungsten lamp, a xenon lamp, a light emitting diode, and a fluorescent lamp.

38. (Canceled)

39. (Currently Amended) The method for testing according to claim 3, wherein the visible light ~~has-such~~ is irradiated from a light source [[as]] selected from the group consisting of a metal halide lamp, a halogen lamp, a tungsten lamp, a xenon lamp, a light emitting diode, and a fluorescent lamp.

40.-41. (Canceled)

42. (Currently Amended) The method for testing according to claim 26, wherein the visible light ~~has-such~~ is irradiated from a light source [[as]] selected from the group consisting of a metal halide lamp, a halogen lamp, a tungsten lamp, a xenon lamp, a light emitting diode, and a fluorescent lamp.

43. (Canceled)

44. (Currently Amended) The method for testing according to claim 28, wherein the visible light ~~has-such~~ is irradiated from a light source [[as]] selected from the group consisting of a metal halide lamp, a halogen lamp, a tungsten lamp, a xenon lamp, a light emitting diode, and a fluorescent lamp.

45. (Currently Amended) The method for testing according to claim 1, wherein [[a]] an illumination intensity of the visible light ~~to be irradiated~~ irradiating on a surface of the semiconductor film is 10,000 lux or more.

46. (Canceled)

47. (Currently Amended) The method for testing according to claim 3, wherein [[a]] an illumination intensity of the visible light ~~to be irradiated~~ irradiating on a surface of the semiconductor film is 10,000 lux or more.

48.-49. (Canceled)

50. (Currently Amended) The method for testing according to claim 26, wherein [[a]] an illumination intensity of the visible light ~~to be irradiated~~ irradiating on a surface of the semiconductor film is 10,000 lux or more.

51. (Canceled)

52. (Currently Amended) The method for testing according to claim 28, wherein [[a]] an illumination intensity of the visible light ~~to be irradiated~~ irradiating on a surface of the semiconductor film is 10,000 lux or more.

53. (Original) The method for testing according to claim 45, wherein the illumination intensity is from 20,000 to 100,000 lux.

54. (Canceled)

55. (Original) The method for testing according to claim 47, wherein the illumination intensity is from 20,000 to 100,000 lux.

56.-57. (Canceled)

58. (Original) The method for testing according to claim 50, wherein the illumination intensity is from 20,000 to 100,000 lux.

59. (Canceled)

60. (Original) The method for testing according to claim 52, wherein the illumination intensity is from 20,000 to 100,000 lux.

61.-68. (Canceled)

69. (Currently Amended) A manufacturing method of a semiconductor device, comprising:

testing each of a plurality of semiconductor films crystallized by an energy beam having a different density by the method for testing according to claim 1; and

determining an irradiation energy density by a result of ~~the testing~~ a test to crystallize ~~[[a]]~~ the semiconductor film.

70. (Canceled)

71. (Currently Amended) A manufacturing method of a semiconductor device, comprising:

testing each of a plurality of semiconductor films crystallized by an energy beam having a different density by the method for testing according to claim 3; and

determining an irradiation energy density by a result of ~~the testing~~ a test to crystallize ~~[[a]]~~ the semiconductor film.

72.-73. (Canceled)

74. (Currently Amended) A manufacturing method of a semiconductor device, comprising:

testing each of a plurality of semiconductor films crystallized by an energy beam having a different density by the method for testing according to claim 26; and

determining an irradiation energy density by a result of ~~the testing~~ a test to crystallize ~~[[a]]~~ the semiconductor film.

75. (Canceled)

76. (Currently Amended) A manufacturing method of a semiconductor device, comprising:

testing each of a plurality of semiconductor films crystallized by an energy beam having a different density by the method for testing according to claim 28; and

determining an irradiation energy density by a result of ~~the testing~~ a test to crystallize ~~[[a]]~~ the semiconductor film.

77. (Original) The manufacturing method according to claim 69, wherein a means for photographing the scattered light is provided in a crystallization chamber.

78. (Canceled)

79. (Original) The manufacturing method according to claim 71, wherein a means for photographing the scattered light is provided in a crystallization chamber.

80.-81. (Canceled)

82. (Original) The manufacturing method according to claim 74, wherein a means for photographing the scattered light is provided in a crystallization chamber.

83. (Previously Presented) The manufacturing method according to claim 77, wherein a means for photographing the scattered light is provided in a crystallization chamber.

84.-85. (Canceled)